# Albany South End Community Air Quality Screening

**August 14, 2014**

**New York State Department of Environmental Conservation**

# Outline

- Overview
  - Goals, Findings
- Details
  - Air pollutants sampled
  - USEPA sampling
  - Sampling locations
  - Meteorological conditions during sampling
  - Results and Spatial analysis
  - Conclusions and Next Steps

# Air Screen Goals

- Screening assessment of current air quality
- Designed to look at worst-case air concentrations
  - Specific meteorological conditions
    - Low wind speed
    - Winds from south and southeast
  - Periods of odor episodes
- If screening indicated a concern – NYSDEC will follow-up

# Findings

- Volatile organic compounds
  - Concentrations below short-term health-based air concentration values
  - Found at concentrations similar to other areas of the State and below State average
  - Therefore concentrations found – would not be considered a public health concern

# Findings

- Light-weight alkanes
  - Added because they are part of the evaporative emissions from Bakken Crude Oil
    - Butane, Hexane, Pentane, Propane
  - Concentrations below health-based air concentration values and therefore not a public health concern
  - Low concentrations of evaporative emissions detected in community

# Details

# Air Screen Goals

- Developed air quality screening approach with community members
- Understand current air quality conditions in community for volatile organic compounds
- Use results as a screening tool to determine if:
  - Further sampling necessary
  - Enhanced facility inspections are necessary

# Air Pollutants

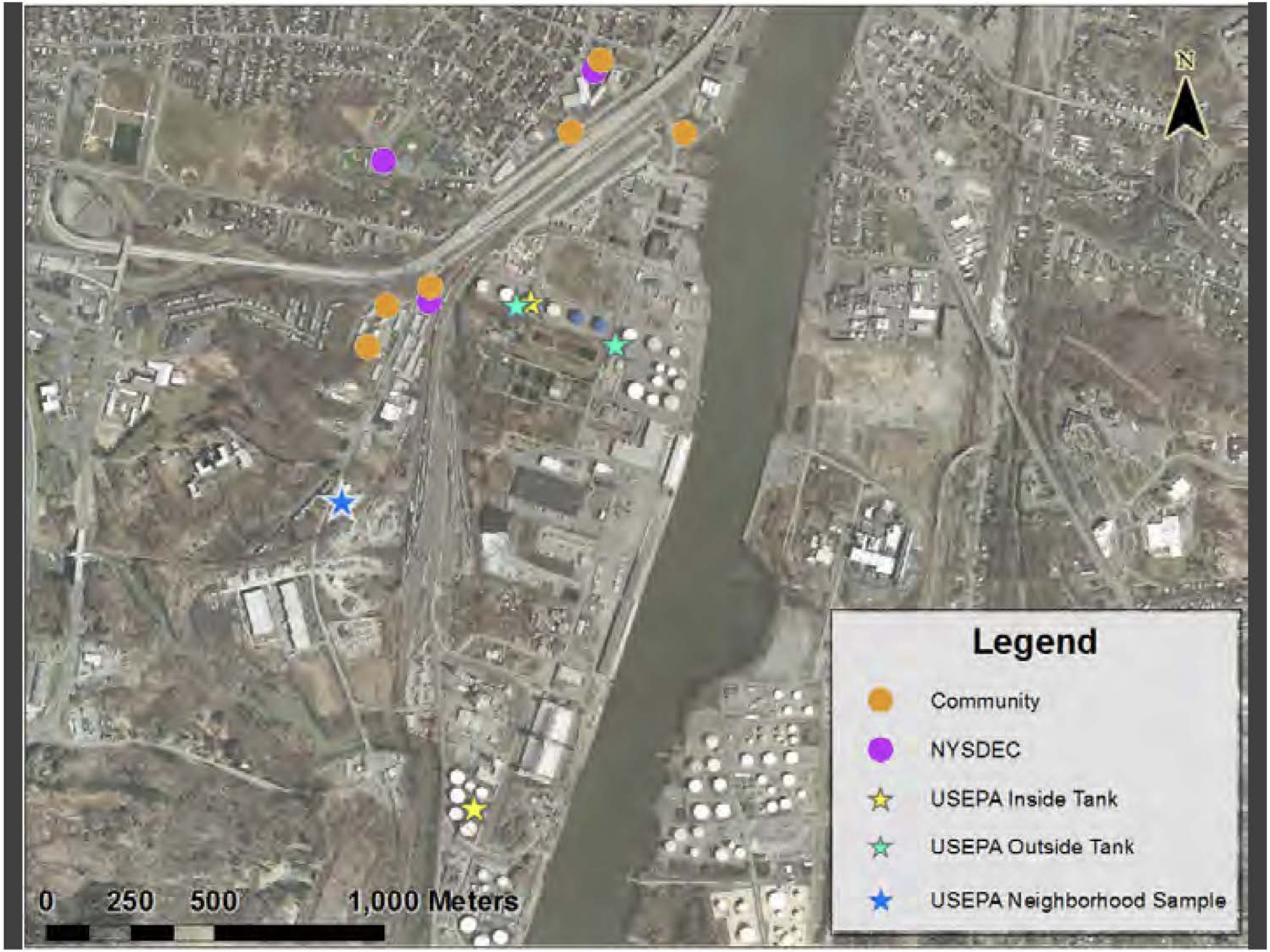
- Volatile organic compounds
  - EPA Method (43 air toxic compounds)
  - Constituents of crude oil
    - Benzene, ethylbenzene, xylenes, toluene
    - Benzene has a more stringent health-based air concentration value
- Light-weight alkanes - added
  - Part of the evaporative emissions from Bakken crude oil
    - Butane, hexane, pentane, propane

# Sampling

- 1-hour samples
- Sampling when and where concentrations are expected to be highest
  - Warm temperatures, low wind speed and winds from south and southeast
- NYSDEC collected samples at three fixed locations on five days
- A community volunteer collected six samples
  - Periods of public concerns/complaints such as when odors were noticeable

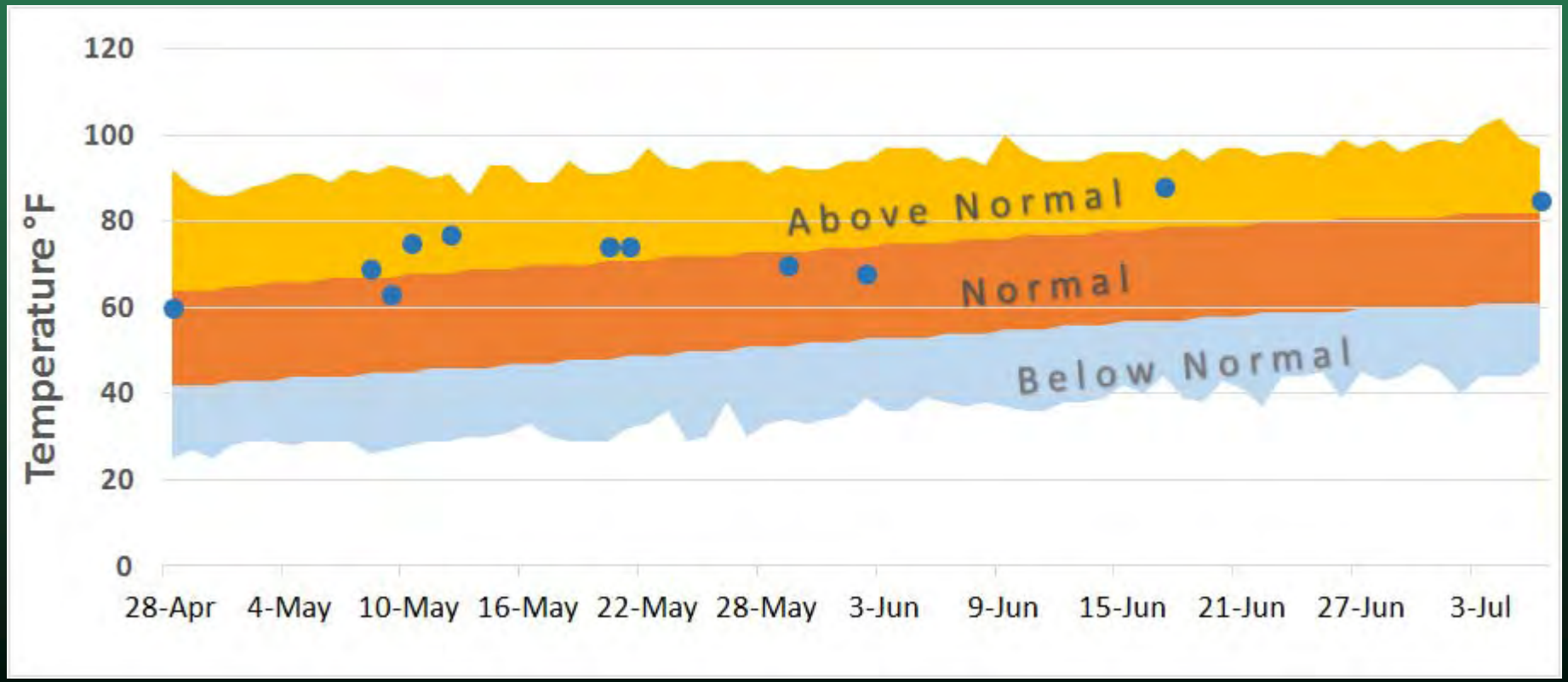
# USEPA Sampling

- Collected in early May
- Samples collected onsite at Global and Buckeye facilities
- One neighborhood sample south of Ezra Prentice homes on South Pearl St.
- 20 second “grab” air samples
- Same sampling equipment as used by NYSDEC


N
Legend
Community
NYSDEC
USEPA Inside Tank
USEPA Outside Tank
USEPA Neighborhood Sample
0
250
500
1,000 Meters

# Meteorological Conditions

- All sampling events during time when winds from the south, southeast and east
- Temperatures were normal or above average



# Evaluation of the Results

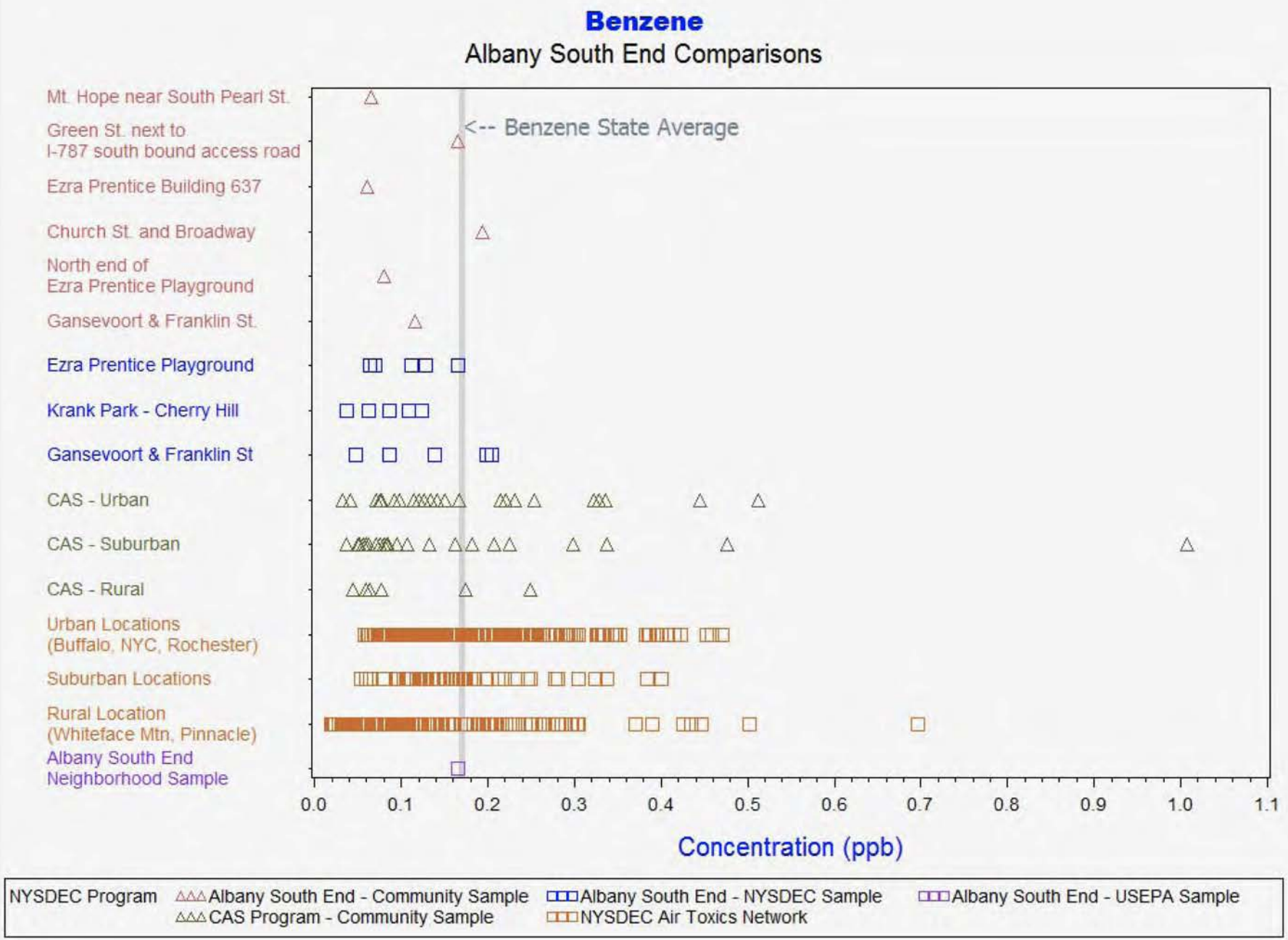
- Compared to NYSDEC's
  - Short-term health-based air concentration values (1 hour)
    - Derived to protect the general public from adverse effects from short-term exposures
    - The general public includes infants, children, elderly and other individuals who may be susceptible
  - Other State data
    - Community 1 hour samples
    - Statewide air toxics network

# Evaluation of the Results

- Compared to NYSDEC's
  - Comparison done to evaluate need for follow-up activities such as additional monitoring or enhanced facility inspections
  - Long-term health-based air concentration values (annual)
    - Comparison (1 hour sample to long-term value) is not a conventional approach
    - Derived to protect the public from adverse health effects from long-term (e.g., continuous lifetime) exposures to air pollutants

# Results

- Volatile organic compounds
  - Concentrations below short-term health-based air concentration values and therefore not a public health concern
  - Benzene concentrations are similar to or below levels found in other areas of the State
  - Other VOC results found at concentrations similar to other areas of the State


Benzene
Albany South End Comparisons
Mt. Hope near South Pearl St.
Green St. next to
I-787 south bound access road
Ezra Prentice Building 637
Church St. and Broadway
North end of
Ezra Prentice Playground
Gansevoort & Franklin St.
Ezra Prentice Playground
Krank Park - Cherry Hill
Gansevoort & Franklin St
CAS - Urban
CAS - Suburban
CAS - Rural
Urban Locations
(Buffalo, NYC, Rochester)
Suburban Locations
Rural Location
(Whiteface Mtn, Pinnacle)
Albany South End
Neighborhood Sample
<-- Benzene State Average
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
Concentration (ppb)
NYSDEC Program
Albany South End - Community Sample
CAS Program - Community Sample
Albany South End - NYSDEC Sample
NYSDEC Air Toxics Network
Albany South End - USEPA Sample

# Results

- Light-weight alkanes
  - Low toxicity
  - Concentrations below health-based air concentration values and therefore not a public health concern

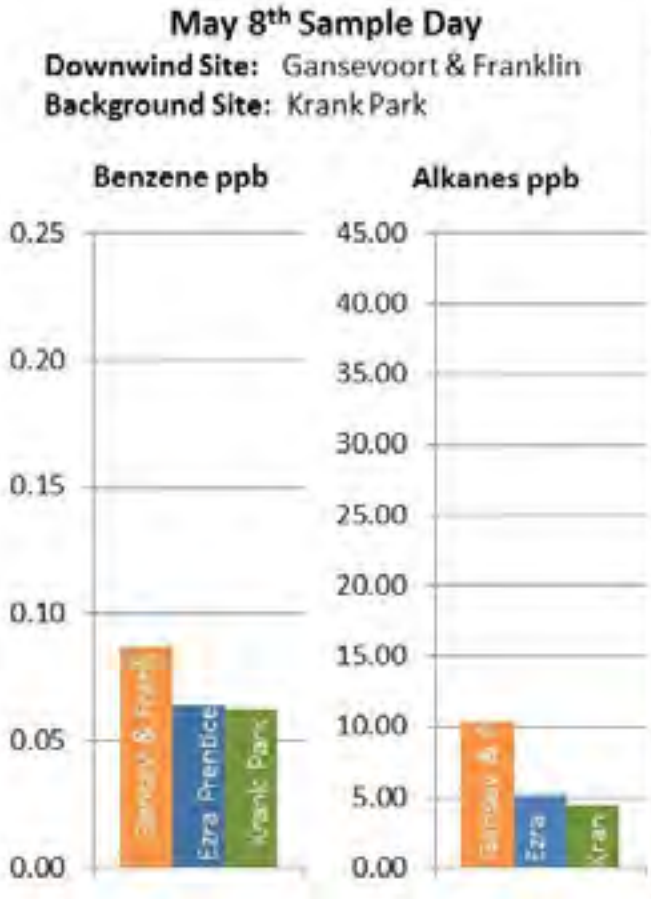
# Spatial Analysis

- Data from each simultaneous sample collection were used to determine if there are local sources impacting the community
- Local sources would impact one of the NYSDEC sites more than the other two
- Distant and city-wide sources (like motor vehicles) would impact the three NYSDEC sites more evenly

## May 8

Local impact site - Gansevoort & Franklin is impacted by sources to the south to a higher degree than Ezra Prentice or Krank Park

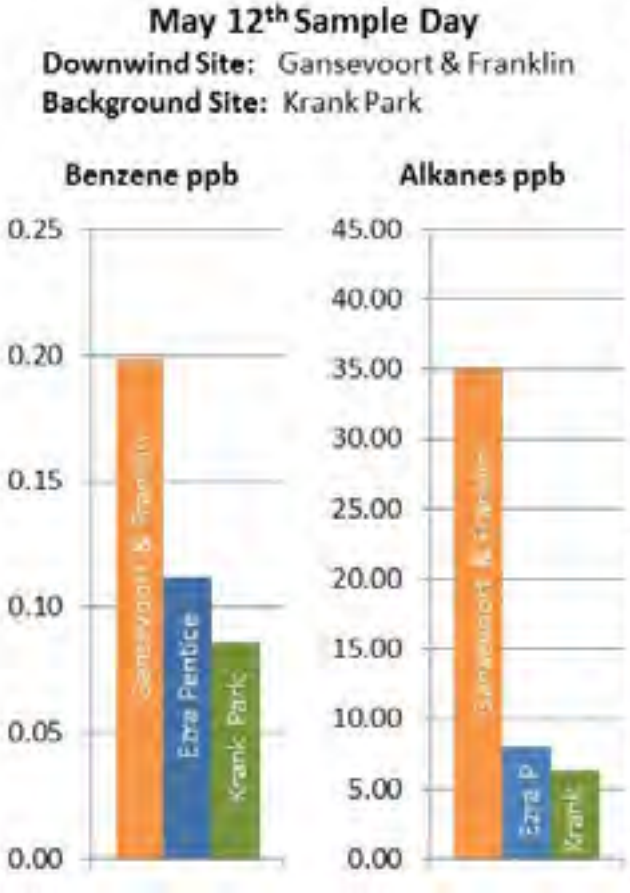
Temperature $69^0$ F




## May 12

Local impact site - Gansevoort & Franklin is impacted by sources to the south to a higher degree than Ezra Prentice or Krank Park

Temperature $77^0$ F – higher temperature and benzene concentrations compared to May 8




## May 21

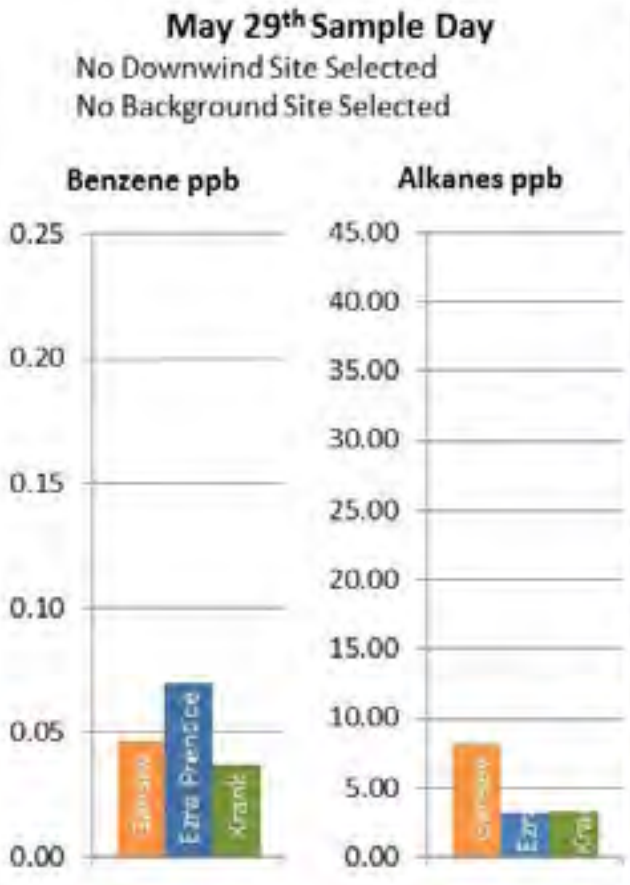
Local impact site - Gansevoort & Franklin is impacted by sources to the southeast to a higher degree than Ezra Prentice or Krank Park

Temperature $74^0$ F – higher benzene concentrations compared to May 8 and 12

## May 29

No local impact site was identified. Benzene concentrations are low overall. Ezra Prentice is higher than the other two sites.

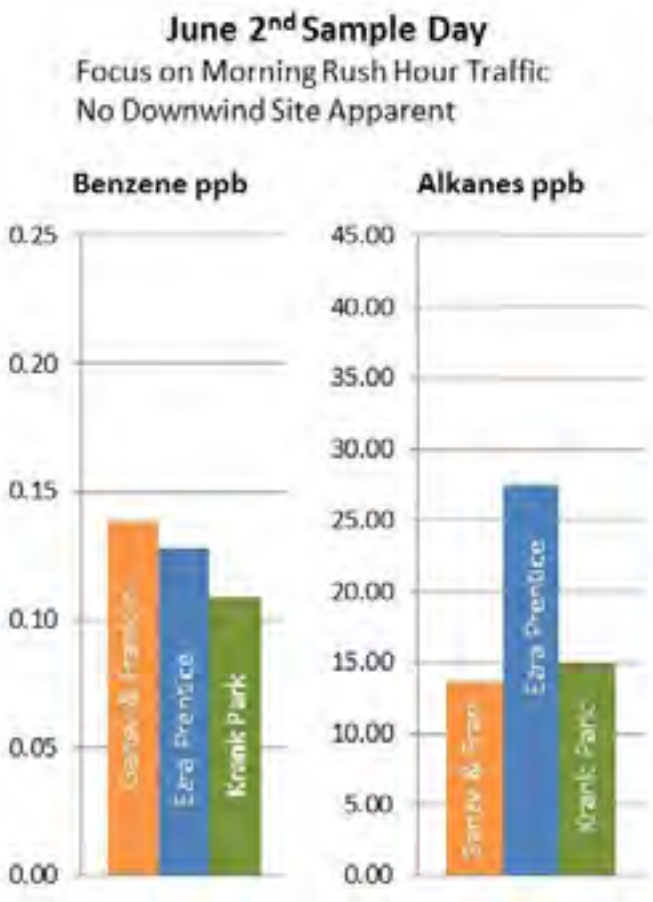
Temperature $70^0$ F




## June 2

No local impact site was identified. Collected at 8:10 am to assess the impact of rush hour traffic.  Benzene concentrations similar at the three sites.

Temperature $68^0$ F




# Spatial Analysis

- For 3 of the 5 (1 hour) sample events, locally impacted and background (city-wide impact) sites were identified
- The addition from local sources is defined as the benzene at the local impacted site minus benzene at the background site
  - May 8 Gansev&Fr – Krank P = 0.024 ppb
  - May 12 Gansev&Fr – Krank P = 0.112 ppb
  - May 21 Gansev&Fr – Krank P = 0.082 ppb
- Background benzene concentrations were
  - May 8 (0.063 ppb), May 12 (0.086 ppb) and May 21 (0.123 ppb)

# Summary of Spatial Analysis

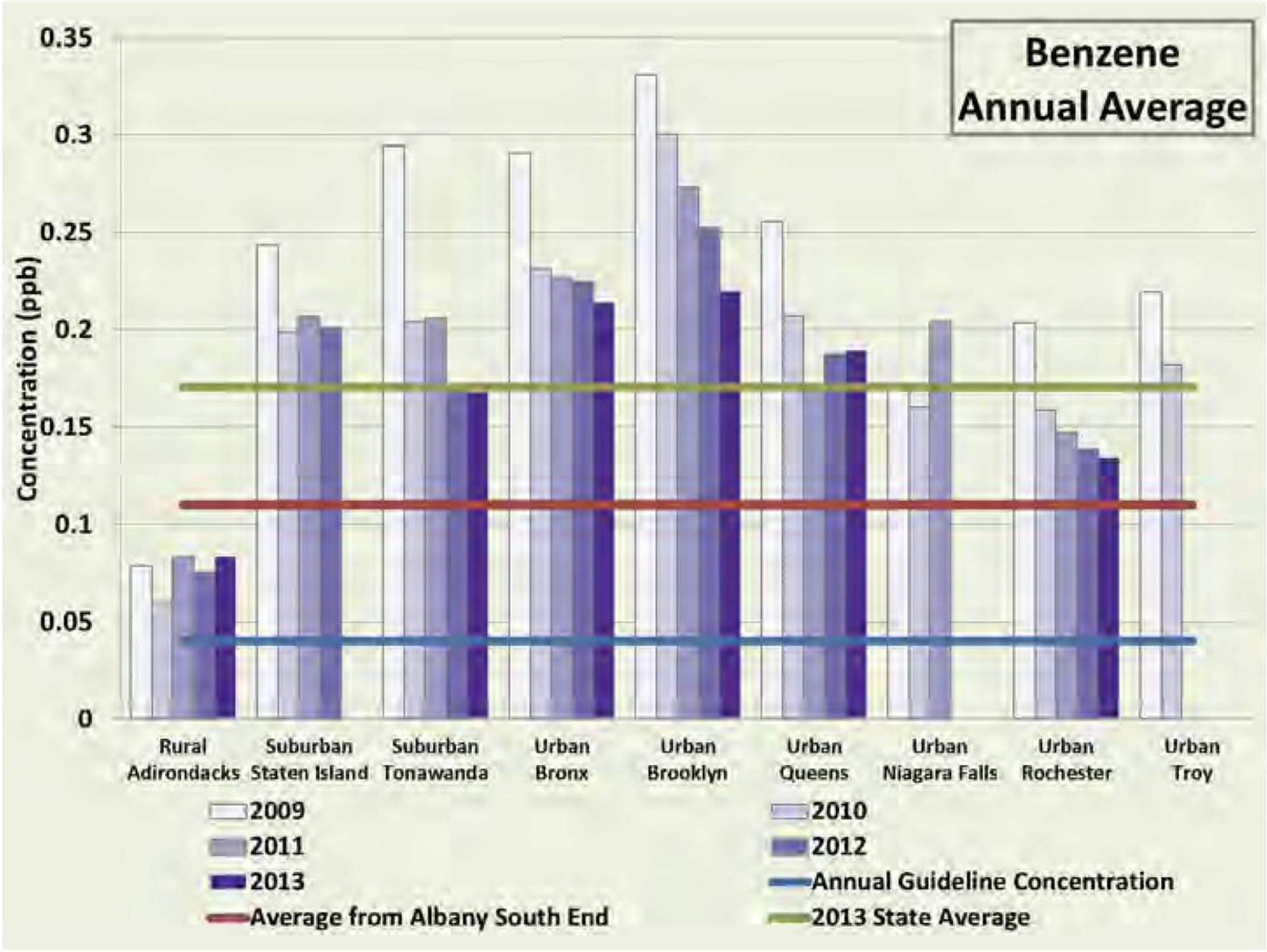
- The additional benzene from local sources was detectable in 2 of the 3 sample events
- The spatial analysis does not account for local emissions that impact more than one sampling location
- This analysis is applicable to three 1 hour sample events, other sources such as rush hour traffic and other meteorological conditions can impact benzene levels at other times

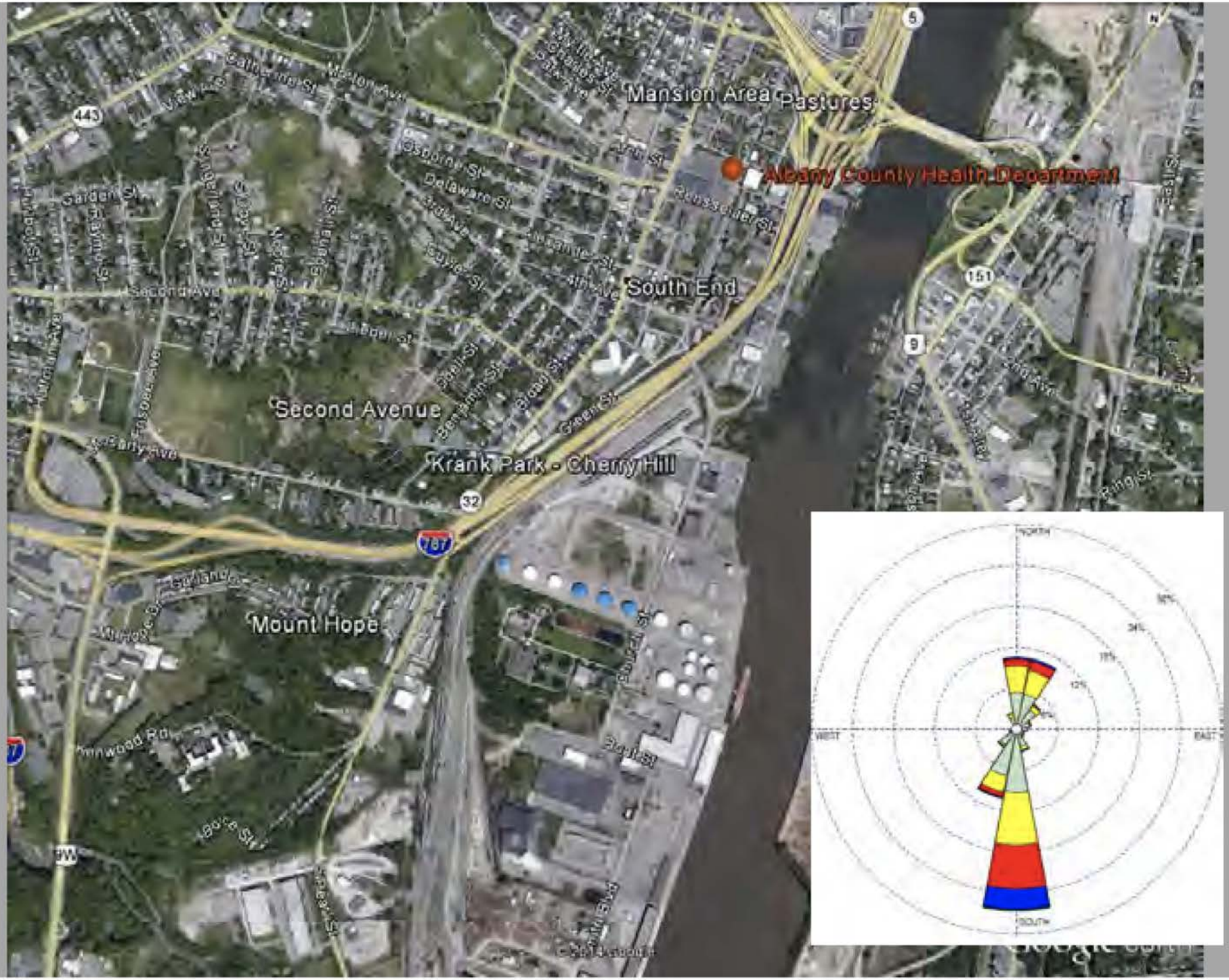
# Conclusions

- All results were below NYSDEC's short-term health-based air concentration values and most were below or within an order of magnitude of the long-term health-based air concentration values
- Results were within the range of levels found in locations in other parts of the State
- NYSDEC did not identify concentrations of air toxics that would necessitate further air sampling or enhanced facility inspections

# Next Steps

- Baseline measurements
  - Formaldehyde
    - Sampler at Albany County Health Department
    - Collection May – August 2014
  - Hydrogen Sulfide
    - Portable instrument
    - Collect samples in the neighborhood


Benzene
Annual Average
Concentration (ppb)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Rural Adirondacks
Suburban Staten Island
Suburban Tonawanda
Urban Bronx
Urban Brooklyn
Urban Queens
Urban Niagara Falls
Urban Rochester
Urban Troy
2009
2010
2011
2012
2013
Annual Guideline Concentration
Average from Albany South End
2013 State Average


Mansion Area
Pastures
Albany County Health Department
South End
Second Ave
Krank Park - Cherry Hill
Mount Hope
443
5
151
9
32
787
87
90